K073042

HemosIL D-Dimer
510(k) Summary (Summary of Safety and Effectiveness)

Applicant Contact Information:

Applicant:	Instrumentation Laboratory Co.
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JUL 31 2008

Preparation Date: June 27, 2008

Device Trade Name:

HemosIL D-Dimer

Regulatory Information:

Classification Name:	Fibrinogen and Fibrin Split Products, Antigen, Antiserum, Control
Device Class:	Class II
Regulation No.:	864.7320
Product Code:	DAP
Panel:	Hematology

Predicate Device:

K070927	HemosIL D-Dimer HS

Device Intended Use:

HemosIL D-Dimer is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on IL Coagulation Systems for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) in outpatients suspected of deep venous thrombosis (DVT) and pulmonary embolism (PE).

Device Description:

The D-Dimer Latex Reagent is a suspension of polystyrene latex particles of uniform size coated with a monoclonal antibody highly specific for the D-Dimer domain included in fibrin soluble derivatives. When a plasma containing D-Dimer is mixed with the Latex Reagent and the Reaction Buffer included in the D-Dimer kit, the coated latex particles agglutinate. The degree of agglutination is directly proportional to the concentration of D-Dimer in the sample and is determined by measuring the decrease of the transmitted light at 405 nm caused by the aggregates (turbidimetric immunoassay).

Technological Characteristic Summary:

The HemosIL D-Dimer assay is equivalent to the currently marketed HemosIL D-Dimer assay (K050278), except for the Intended Use. For purposes of the Intended Use expansion, we also claim equivalence to the HemosIL D-Dimer HS assay (K070927).

Substantial Equivalence Comparison Table:

Characteristic	Modified Device: HemosIL D-Dimer	Predicate Device: Current HemosIL D-Dimer (K050278)	Predicate Device: HemosIL D-Dimer HS (K070927)
Indications for use	HemosIL D-Dimer is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on IL Coagulation Systems for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) in outpatients suspected of deep venous thrombosis (DVT) and pulmonary embolism (PE).	HemosIL D-Dimer is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on IL Coagulation Systems as an aid in the diagnosis of venous thromboembolism (VTE) [deep venous thrombosis (DVT) and pulmonary embolism (PE)].	HemosIL D-Dimer HS is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on the ACL TOP for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) [deep venous thrombosis (DVT) and pulmonary embolism (PE)].
Assay principle	Latex-enhanced immunoturbidmetric assay	Same	Same
Instruments	IL Coagulation Systems	Same	ACL TOP instruments only
Sample type	Citrated plasma	Same	Same
Calibrator	Kit Calibrator	Same	Same
Quality Control	HemosIL D-Dimer Controls	Same	Same
Measuring Range	200 - 5250 ng/mL with automatic rerun	Same	150 - 69000 ng/mL with automatic rerun
Detection Limit	ACL Family 140 ng/mL ACL Futura/ACL Advance 156 ng/mL ACL TOP 69 ng/mL	Same	ACL TOP 21 ng/mL

Substantial Equivalence Comparison Table (Cont.):

Characteristic	Modified Device: HemosIL D-Dimer	Predicate Device: HemosIL D-Dimer (K050278)	Predicate Device: HemosIL D-Dimer HS (K070927)
Within-run Precision (% CV)	ACL Family: • 4.5% at 246 ng/mL • 6.01% at 310 ng/mL • 2.42% at 732 ng/mL ACL Futura/ACL Advance: • 11.82% at 304 ng/mL • 3.59% at 813 ng/mL ACL TOP: • 6.8% at 282 ng/mL • 4.6% at 340 ng/mL • 2.5% at 729 ng/mL	Same	ACL TOP: • 8.3% at 180 ng/mL • 3.7% at 314 ng/mL • 2.0% at 677 ng/mL
Interferences	ACL Family and ACL Futura/ACL Advance Systems: • Hemoglobin up to 50 mg/dL • Bilirubin up to 5 mg/dL • Lipids up to 1000 mg/dL • Rheumatoid Factor up to 60 IU/mL ACL TOP • Hemoglobin up to 100 mg/dL • Bilirubin up to 10 mg/dL • Triglycerides up to 1500 mg/dL • The presence of Rheumatoid Factor may produce an overestimation of the test result	Same	ACL TOP: • Hemoglobin up to 500 mg/dL • Bilirubin up to 18 mg/dL • Triglycerides up to 1327 mg/dL • Rheumatoid Factor up to 1400 UI/mL
Clinical Cut-off	230 ng/mL	Same	Same

Performance Data:

A multi-center management study was performed at four hospitals on patients admitted consecutively to the emergency unit with suspected DVT or PE using representative IL Coagulation Systems: an ACL TOP (632 samples) and an ACL ELITE (629 samples). 302 patients on the ACL TOP and 298 patients on an ACL ELITE were suspected of DVT; 330 patients on the ACL TOP and 331 patients on the ACL ELITE were suspected of PE. As part of the study, patients underwent a PTP (pretest probability) assessment using the Wells model and were classified as having a high, moderate, or low probability of DVT or PE. Patients with a negative D-Dimer test result and a low PTP score underwent no further diagnostic testing and were followed-up after 3 months for development of DVT or PE. For patients with a negative D-Dimer test result and a moderate PTP, it was the physician's decision whether to follow-up after 3 months or to undergo imaging techniques. Patients with a positive D-Dimer test result or a high PTP score underwent imaging techniques.

There was one case during the study where a patient with a moderate PTP score and a negative D-Dimer test result on the ACL ELITE was confirmed for PE through imaging techniques. This same sample gave a positive D-Dimer test result on the ACL TOP.

The overall prevalence of DVT in the total population of samples was 19.5% (59/302) on the ACL TOP and 20.5% (61/298) on the ACL ELITE. The overall prevalence of PE in the total population of samples was 15.2% (50/330) on the ACL TOP and 15.1% (50/331) on the ACL ELITE.

The sensitivity, specificity and negative predictive value (NPV) of HemosIL D-Dimer on the ACL TOP and ACL ELITE for DVT and PE using the previously established clinical cut-off of 230 ng/mL is summarized below with the corresponding 95% confidence intervals (CI):

ACL TOP			
DVT Performance	**All samples**	**High PTP**	**Low + Moderate PTP**
n	302	53	249
Sensitivity	100.0% (59/59) (93.9%-100.0%)	100.0% (27/27) (87.2%-100.0%)	100.0% (32/32) (89.1%-100.0%)
Specificity	41.6% (101/243) (35.3%-48.0%)	34.6% (9/26) (17.2%-55.7%)	42.4% (92/217) (35.7%-49.3%)
Negative Predictive value	100.0% (101/101) (96.4%-100.0%)	100.0% (9/9) (66.4%-100.0%)	100.0% (92/92) (96.1%-100.0%)
Positive Predictive value	29.4% (59/201) (23.2%-36.2%)	61.4% (27/44) (45.5%-75.6%)	20.4% (32/157) (14.4%-27.5%)
Prevalence	19.5% (59/302) (15.2%-24.5%)	50.9% (27/53) (36.8%-64.9%)	12.9% (32/249) (9.0%-17.7%)
PE Performance	**All samples**	**High PTP**	**Low + Moderate PTP**
n	330	24	306
Sensitivity	100.0% (50/50) (92.9%-100.0%)	100.0% (7/7) (59.0%-100.0%)	100.0% (43/43) (91.8%-100.0%)
Specificity	29.3% (82/280) (24.0%-35.0%)	17.6% (3/17) (3.8%-43.4%)	30.0% (79/263) (24.6%-36.0%)
Negative Predictive value	100.0% (82/82) (95.6%-100.0%)	100.0% (3/3) (29.2%-100.0%)	100.0% (79/79) (95.4%-100.0%)
Positive Predictive value	20.2% (50/248) (15.4%-25.7%)	33.3% (7/21) (14.6%-57.0%)	18.9% (43/227) (14.1%-24.7%)
Prevalence	15.2% (50/330) (11.5%-19.5%)	29.2% (7/24) (12.6%-51.1%)	14.1% (43/306) (10.4%-18.5%)

Performance Data (Cont.):

ACL ELITE			
DVT Performance	**All samples**	**High PTP**	**Low + Moderate PTP**
n	298	54	244
Sensitivity	100.0% (61/61) (94.1%-100.0%)	100.0% (29/29) (88.1%-100.0%)	100.0% (32/32) (89.1%-100.0%)
Specificity	33.8% (80/237) (27.8%-40.2%)	24.0% (6/25) (9.4%-45.1%)	34.9% (74/212) (28.5%-41.7%)
Negative Predictive Value	100.0% (80/80) (95.5%-100.0%)	100.0% (6/6) (54.1%-100.0%)	100.0% (74/74) (95.1%-100.0%)
Positive Predictive Value	28.0% (61/218) (22.1%-34.4%)	60.4% (29/48) (45.3%-74.2%)	18.8% (32/170) (13.2%-25.5%)
Prevalence	20.5% (61/298) (16.0%-25.5%)	53.7% (29/54) (39.6%-67.4%)	13.1% (32/244) (9.1%-18.0%)
PE Performance	**All samples**	**High PTP**	**Low + Moderate PTP**
n	331	25	306
Sensitivity	98.0% (49/50) (89.4%-99.9%)	100.0% (8/8) (63.1%-100.0%)	97.6% (41/42) (87.4%-99.9%)
Specificity	41.3% (116/281) (35.5%-47.3%)	41.2% (7/17) (18.4%-67.1%)	41.3% (109/264) (35.3%-47.5%)
Negative Predictive Value	99.1% (116/117) (95.3%-100.0%)	100.0% (7/7) (59.0%-100.0%)	99.1% (109/110) (95.0%-100.0%)
Positive Predictive Value	22.9% (49/214) (17.4%-29.1%)	44.4% (8/18) (21.5%-69.2%)	20.9% (41/196) (15.4%-27.3%)
Prevalence	15.1% (50/331) (11.4%-19.4%)	32.0% (8/25) (14.9%-53.5%)	13.7% (42/306) (10.1%-18.1%)

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
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JUL 31 2008

Instrumentation Laboratory
c/o Carol Marble
Regulatory Affairs Director
113 Hartwell Avenue
Lexington, Massachusetts 02421

Re: k073042
Trade/Device Name: Hemosil D-Dimer
Regulation Number: 21 CFR 864.7320
Regulation Name: Fibrinogen/Fibrin Degradation Product Assay
Regulatory Class: Class II
Product Code: DAP
Dated: June 27, 2008
Received: June 30, 2008

Dear Ms. Marble:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Parts 801 and 809); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820). This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed

predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Office of In Vitro Diagnostic Device Evaluation and Safety at (240) 276-0450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding postmarket surveillance, please contact CDRH's Office of Surveillance and Biometric's (OSB's) Division of Postmarket Surveillance at (240) 276-3474. For questions regarding the reporting of device adverse events (Medical Device Reporting (MDR)), please contact the Division of Surveillance Systems at (240) 276-3464. You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (240) 276-3150 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

Maria M. Chan

Maria M. Chan, Ph.D.
Acting Director
Division of Immunology and Hematology Devices
Office of *In Vitro* Diagnostic Device Evaluation
and Safety
Center for Devices and Radiological Health

Enclosure

Indications for Use Statement

510(k) Number (if known): K073042

Device Name: HemosIL D-Dimer

Indications for Use:

HemosIL D-Dimer is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on IL Coagulation Systems for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) in outpatients suspected of deep venous thrombosis (DVT) and pulmonary embolism (PE).

For *in vitro* diagnostic use.

Prescription Use √ (Part 21 CFR 801 Subpart D) AND/OR Over-The-Counter Use _____ (21 CFR 801 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE - CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Division Sign-Off

Office of In Vitro Diagnostic Device Evaluation and Safety

510(k) K073042